Summary

Clean Vessel Act: Pumpout Station and Dump Station Technical Guidelines

Technical Guidelines

The Fish and Wildlife Service will administer the Clean Vessel Act grant program through State agencies only. Both public and private marinas are eligible to participate in this program and should conform to these technical guidelines if they do participate. Marinas that do not participate in this program would not have to conform to these guidelines. The Service believes that public/private partnerships are a very important part of the success of this program, and will give higher priority to those projects that provide such partnership. Inability of a State to give grants to private marinas will result in a lowering of that State's priority for funds. Those States that have legal/administrative roadblocks are strongly encouraged to overcome them through changes in their law or procedures.

These technical guidelines should be followed when doing surveys, developing a plan and education program, and constructing pumpout stations and dump stations. Technical guidelines are presented here by section. At the end of these guidelines, an information packet is presented, which contains a general discussion of each section and provides greater detail.

Definitions

For the purposes of these technical guidelines the term: *(1) Type III marine sanitation device (holding tank)* means any equipment for installation on board a vessel which is specifically designed to receive, retain, and discharge human body wastes; *(2) pumpout station* means a facility that pumps or receives human body wastes out of Type III marine sanitation devices installed on board vessels; *(3) recreational vessel* means a vessel (a) manufactured for operation, or operated, primarily for pleasure; or (b) leased, rented, or chartered to another for the latter's pleasure; *(4) dump station* means an upland or floating waste reception facility specifically designed to receive wastes from portable toilets carried on vessels, or floating restrooms in the water, not connected to land or structures connected to the land, used solely by boaters, and does not include upland restroom facilities; *(5) marina* means a facility with ten or more wet slips and/or dry land storage; *(6) Parking lot harbor* means a harbor which is home port to many boats kept on swing moorings or in marina docks. Most of the time, most of the boats are unoccupied and unused; *(7) Transient harbor* means ``destination'' harbor where boaters go during day trips or berth overnight; *(8) Portable toilet* means toilets that are not installed toilets. They are designed to be removed from a vessel and their contents emptied into shoreside receptacles; *(9) Coastal zone* has the same meaning that term has in section 304(1) of the Coastal Zone Management Act of 1972 (16 U.S.C. 1453 (1). Section 1453 defines ``coastal zone'' as follows: ``The term `coastal zone' means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extend necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.''

Section 1. Waters Most Likely To Be Affected by the Discharge of Sewage From Vessels

Guidelines for States to use in identifying waters most likely to be affected by the discharge of sewage from vessels are those waters frequented by large numbers of boaters and include: (1) Sheltered waters that are generally poorly flushed systems; (2) Waters identified to be of National Significance; (3) Waters of significant recreational value; (4) Waters supporting designated shellfish harvest areas; (5) State and federally designated Nursery areas of indigenous aquatic life; (6) Waters designated by the EPA as ``No Discharge Areas'' under section 312(f)(3) and (4) (A) & (B) of the Clean water Act, and (7) Waters that do not meet State designated usage.

Section 2. Surveys of Pumpout Stations and Dump Stations

Only coastal States are required to do a survey. Coastal States should submit surveys to the Federal Air official at the appropriate Fish and Wildlife Service Regional Office, as follows:

(1) Region 1 coastal States include California, Commonwealth of the Northern Mariana Islands, Guam, Hawaii, Oregon, and Washington: Deputy Assistant Regional Director, Division of Federal Aid, U.S. Fish and Wildlife Service, Eastside Federal Complex, 911 NE 11th Avenue, Portland, Oregon 97232-4181, (503) 231-6128.

(2) Region 2 coastal State includes Texas: Deputy Assistant Regional Director, Division of Federal Aid, U.S. Fish and Wildlife Service, P.O. Box 1306, 500 Gold Avenue, SW., Albuquerque, New Mexico 87103, (505) 766-2095.

(3) Region 3 coastal States include Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin: Deputy Assistant Regional Director, Division of Federal Aid, U.S. Fish and Wildlife Service, Bishop Henry Whipple Federal Building, 1 Federal Drive, Fort Snelling, Minnesota 55111-4056, (612) 725-3596.

(4) Region 4 coastal States include Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, Puerto Rico, South Carolina, and the Virgin Islands: Deputy Assistant Regional Director, Division of Federal Aid, U.S. Fish and Wildlife Service, 1875 Century Boulevard, suite 324, Atlanta, Georgia 30345, 404/679- 4159.

(5) Region 5 coastal States include Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Virginia: Deputy Assistant Regional Director, Division of Federal Aid, U.S. Fish and Wildlife Service, 300 Westgate Center Drive, Hadley, Massachusetts 01035-9589, (413) 253-8501.

Pumpout station/dump station survey: All marinas, moorages, docks, etc., should be surveyed. The survey should include whether the marina has pumpout stations, dump stations, or both; how many pumpout and dump stations; which ones are operational; and, the specific coordinates of each operational pumpout and dump station. For pumpout and dump stations not located in the above marinas, moorages, etc., such as at ramps, the specific coordinates should be obtained for these facilities also. Specific coordinates, i.e., latitude and longitude, should be reported in North American Datum 1983 (NAD 83) standard. Other alternatives include (a) State Plane Coordinate Values, and (b) A portion of a NOAA nautical chart identified by chart number, edition, and edition date that marks clearly the pumpout station/dump station. Specific coordinates for all pumpout and dump stations should be submitted to the appropriate

Regional Office of the Fish and Wildlife Service for inclusion on NOAA charts. Suggested survey questions include the following for each facility: (1) Name and address of marina, moorage, dock, etc.; (2) whether the marina is public or private; (3) telephone number; (4) location of marina, etc., by county, water body and specific coordinates; (5) whether the marina has pumpout stations, dump stations, or both; (6) how many pumpout and dump stations; and, (7) whether the pumpout and dump stations are operational.

Boat survey: The survey should include the following: (1) Total number of boats by water body and county; (2) How many boats have Type III MSD holding tanks; (3) How many boats have portable toilets.

A complete survey of all boaters is not necessary. States should obtain only as much information as is necessary to determine, within reasonable confidence limits, numbers of boats, how many boats have Type III MSD holding tanks or portable toilets, and where boaters are most likely to congregate by water body and county. Sample surveys are acceptable. Recent surveys are acceptable if they answer all the questions needed.

Section 3. What Constitutes Adequate and Reasonably Available Pumpout Stations and Dump Stations in Boating Areas As a general guide, at least one pumpout station and dump station should be provided for every 300 to 600 boats over 16 feet length overall. This is not a requirement, but guidance only, and should be modified depending on the situation. For instance, if most boats in an area are under 26 feet, many more dump stations would be required than pumpout stations. Another question is the minimum number of boats that should have pumpout stations and dump stations. Again, there is no one answer. it is suggested that marinas with 50 slips or more that are capable of mooring 26 feet + boats have access to at least one pumpout station, and marinas with 50 slips or more that are capable of mooring 16-26 feet boats have access to at least one dump station. This does not mean that every marina with 50 + slips should have a pumpout station or dump station. Where marinas are adjacent (within two miles of each other), pumpout stations can be shared. Other factors should be considered, such as whether the marina is a parking lot or transient harbor, or the amount of fuel dock use. In determining the installation of any pumpout station or dump station, such factors as boat size, boating use patterns, coastal water characteristics, sensitive areas, flushing capacity, etc., should play a large role in establishing needs for facilities. Due to the variability in each State, States must have the flexibility to provide criteria that addresses their specific needs. See the discussion in the Information Packet, section 3, for alternative approaches to determining need.

Dump stations should be sited in conjunction with pumpout stations, but should also be located where there are no pumpout stations but where boats with portable toilets congregate or are used, such as launching ramps.

Program evaluation should be given great emphasis to assure quality products. States should evaluate and monitor the program effectiveness to determine that facilities are operated and maintained, and used for their intended purpose. Changes to approaches should be made as weaknesses and/or opportunities become apparent.

Section 4. Plans for Construction Pumpout Stations and Dump Stations
Only coastal States are required to develop a plan. Coastal States should work with the recreational marina industry and others in developing the plan. Coastal States should submit the plan to the appropriate Fish and Wildlife Service Regional Office, same address as in section 2 above. Following is an outline which should be used by States when developing the plan:

(1) *Need.* This section should establish the justification for the proposed work based on (a) the results of the surveys of existing pumpout stations and dump stations and the number of recreational vessels; (b) that part of the guidance relating to determining the adequacy and reasonable availability of pumpout stations and dump stations and, (c) that part of the guidance describing the waters most likely to be affected by the discharge of sewage from vessels.

(2) *Goals and objectives.* The purpose of the plan should be to ensure the availability of adequate and reasonably available pumpout stations and dump stations to the boating public throughout the coastal zone of a State.

(3) *Expected results or benefits.* This section should describe in general how water will be improved by making pumpout and dump stations available.

(4) *Approach.* In this section, describe the following: (a) How the plan addresses all coastal zone waters of the State, and gives priority to waters most likely affected; (b) How the plan complements plans of adjacent States for shared waters; (c) The strategy for locating and constructing, renovating and maintaining pumpout and dump stations. Address the question of whether or not an existing pumpout or dump station is worth upgrading, and how demonstrated problem facilities will be upgraded or eliminated. Include the general location and priority of projects; (d) How States will ensure that (i) waste will be disposed of properly, and (ii) that municipal waste treatment plants will accept waste; (e) What proportion of the slip/mooring capacity is in public vs. private marinas, how States will seek public/private partnerships for siting, constructing and operating pumpout stations and dump stations, any issues/problems, such as legislative/regulatory barriers, and what will be done to overcome these barriers; (f) Innovative techniques to increase the availability and use of pumpout stations/dump stations; (g) Approaches to educate and inform the public and the boating industry on the sue of, and need for, disposal of vessel waste; and, (h) Total estimated cost of the Statewide plan.

Section 5. Education/Information

Guidelines for States to consider when developing an education/information plan include:

(1) *Audience:* Consider six audiences when developing your education/information program regarding vessel sewage disposal, handling, and treatment, as follows: (a) Boat owners and operators; (b) Marina owners and operators; (c) Sewage treatment plan owners and operators; (d) Federal (where applicable), State and local governmental authorities and organizations; (e) Boating supply and retailers; (f) The general public.

(2) *Communication media:* There are a variety of media that States may use for disseminating this information. Common methods to consider are: brochures, workshops/symposiums, educational videos, TV/radio, signs, boat shows, etc. Innovative methods are encouraged.
(3) *Distribution:* States have options for distribution of educational information related to boating and pumpout issues. Options include magazines, radio public interest spots, environmental groups, association and federation newsletters, National Estuary Program forums, State and local education programs, local citizens groups, and student groups. New and innovative ways of educating the boating community and the general public are encouraged.

Section 6. Appropriate Methods for Disposal of Vessel Sewage From Pumpout Stations and Dump Stations

Disposal methods will vary among States depending on a number of factors, including: State

and local sanitation codes; the number of recreational vessels and where the vessels are concentrated; the availability and geographic proximity of existing treatment facilities to boating centers; and hydrogeologic characteristics, including soil types and groundwater flows towards drinking water sources and these coastal waters. Depending on these factors, States may consider the following methods: (1) Off-site treatment: (a) Discharge to a public wastewater collection system and treatment facility; (b) discharge to a holding tank with removal and transport by a person licensed to haul septage waste to a municipal septage receiving/treatment facility; (2) On-site treatment at marinas: (a) Discharge to a package treatment plant; (b) discharge to a septic system.

Section 7. Types of Marine Boat Sewage Pumpout Stations and Dump Stations That May Be Appropriate for Construction, Renovation, Operation, or Maintenance, and Appropriate Location of the Stations and Facilities Within a Marina or Boatyard

Pumpout stations and dump stations should provide an efficient means of removing sewage from boats and a means of disposing of that sewage in a safe and sanitary manner. These facilities should include all the equipment, structures, and disposal facilities necessary to ultimately discharge or dispose of boat sewage in an efficient, safe and sanitary manner without causing an actual or potential public health hazard. Pumpout stations should include equipment for rinsing boat holding tanks. Pumpout stations and dump stations should be adequate to meet the peak use demand for such services. Facilities should be operated and maintained to provide adequate service, and to be maintained to function as intended.
Pumpout stations and dump stations should be reliable, corrosion resistant, easy to use, neat and tidy to clean and use, conveniently located, with low maintenance. Pumps should be specifically designed for handling sewage. Land-based restrooms are not an acceptable option for emptying portable toilets.

All pumps should be safe, functional and efficient. Motors and switches should be ignition protected. Pumps should be able to pump against the maximum head developed by elevation change and line losses. In addition, the suction connection to the boat should be a tight fit and adjustable by adapters to service boat discharge connections. Pumps should be able to transport flows out of the holding tank. Pumps exceeding 45 gallons per minute may cause tanks to collapse.

Factors in determining pumpout station holding tank capacity include boat size and use patterns. Sizing should be done on a case-by-case basis using documented demand, if possible. Holding tanks should be designed and installed to meet local regulations.

For all vessels manufactured after December 31, 1994, a standard deck fitting for removal of sewage should be constructed to the ``International standard ISO 4567 Shipbuilding-Yachets-Waste water fittings'' for holding tanks, which is a female 38.1 mm (1 1/2'') pipe size with 11 threads per 25.4 mm (inch). These threads could utilize a quick-disconnect or cam lock fitting. For existing vessels, an adapter, such as a tapered cone, should be used for non-standard deck fittings. All pumpout connectors should fit the standard deck fitting.

For all vessels manufactured after December 31, 1994, because of possible confusion between waste, fuel and water deck fittings, the deck fittings should be identified with the words ``WASTE'', ``GAS'', ``DIESEL'', and ``WATER'', and color code the fittings with black caps for waste, red caps for gas and diesel, and blue caps for water.

The ultimate location for the station should be based on the unique conditions of the marina, boatyard, mooring field or other anchorage. Stationary pumpout stations should be located for the convenience of, and to encourage boaters to use the facility. Mobile pumpout stations should have reasonable access to boaters.

Section 8. Other Information (No Technical Guidelines)

Information Packet
This information packet is not technical guidelines. It has been recommended to provide additional information to States, and to marinas and others who participate in this program. The information packet presents general information on surveys, plans, education/information, pumpout facilities and other information helpful in promoting establishment of facilities. It provides a more detailed discussion of the technical guidelines, with examples and explanations. This information packet is also by Section, which corresponds to the sections in the technical guidelines.

Section 1. Waters Most Likely To Be Affected by the Discharge of Sewage From Vessels

The following coastal waters, including the Territorial Seas, estuaries, bays, and sounds, and then U.S. lakes and rivers as defined below, are considered waters most likely to be affected by the discharge of sewage from vessels. These definitions are not ranked in priority order.

(1)Sheltered waters that are generally poorly flushed systems.

(2) *Waters of National significance:* Waters identified by the Environmental Protection Agency under the National Estuary Program, waters identified by the NOAA under the Estuarine Reserve program, and Marine Sanctuaries program where appropriate.

(3) *Waters of significant recreational value:* A water body with unusual value as a resource for outdoor recreation activities, e.g., fishing, boating, canoeing, water skiing, swimming, scuba diving, or nature observation. The significance may be in the intensity of present usage, in an unusual quality of recreational experience, or in the potential for unusual future recreational use or experience.

(4) *Shellfish harvest waters:* Waters designated as shellfish producing and harvesting areas.

(5) *Nursery areas of indigenous aquatic life:* State and federally designated significant habitats such as are designated in Coastal Zone programs.

(6) Waters designated by the EPA as ``No Discharge Areas'' under Section 312(f)(3) and (4)(A) & (B) of the Clean Water Act.

(7) Waters that do not meet State designated usage.

Discussion of the Effects of Vessel Sewage on These Waters

Waters previously designated by the EPA under the Clean Water Act as ``No Discharge Areas'' are eligible for renovation, maintenance and further construction funds under this program. The discharge of sewage from boats may degrade water quality by (1) introducing microbial pathogens into the environment and (2) locally increasing biological oxygen demand (U.S. EPA, 1985). While vessel sewage discharges represent only one of many sources of point and non-

point pollution, the number of boats using coastal waters has increased substantially during the past decade. The contribution of boat sewage to total pathogen loadings and local BOD has grown proportionately.

A potentially serious problem resulting from vessel sewage discharges is the introduction of disease-carrying microorganisms from fecal matter into the coastal aquatic environment. Humans are put at risk by eating contaminated shellfish and by swimming in contaminated waters. The major disease-carrying agents are bacteria and viruses, and the most common serious ailment is acute gastroenteritis. Other waterborne diseases include hepatitis, typhoid, and cholera (Milliken and Lee, 1990). The indicators used to detect sewage pollution are not the pathogens themselves, but, rather, coliform bacteria. These bacteria are always present in the human intestinal tract and are thus considered reliable indicators of the presence of human waste (U.S. EPA, 1985). Studies conducted in Puget Sound, Long Island Sound, Narragansett Bay, and Chesapeake Bay have demonstrated that boats can be a significant source of fecal coliform bacteria in coastal waters, particularly in areas with high boat densities and low hydrologic flushing (Milliken and Lee, 1990; JRB Associates, 1980). If coliform levels exceed allowable thresholds, shellfish beds and swimming beaches may be closed to minimize the threat of public health problems. In addition, shellfish beds and some swimming beaches in the immediate vicinity of marinas are often closed because of the potential of contamination from vessel sewage discharges.

These organic-rich wastes also have the potential to depress oxygen levels as they decay in the marine environment. Biological oxygen demand is a measure of the dissolved oxygen required to decompose the organic matter in the water by aerobic processes. When the loading of organic matter increases, the BOD increases, and there is a consequent reduction in the dissolved oxygen available for respiration by aquatic organisms (U.S. EPA, 1985). Although the volume of wastewater discharged from boats is relatively small, the organics in the wastewater are concentrated, and therefore the BOD (1700-3500 mg/l) is much higher than that of raw municipal sewage (110-400 mg/l) or treated municipal sewage (5-100 mg/l) (JRB Associates, 1981). Sewage discharged from holding tanks will thus increase the BOD in the vicinity of boats. When this occurs in poorly flushed waterbodies, the dissolved oxygen concentrations of the water may decrease (Milliken and Lee, 1990). The amount of the decrease in dissolved oxygen concentrations, and therefore the significance to the water, depends on the amount of sewage discharged into the system.

Chemical additives such as chlorine and formaldehyde are used to disinfect or control odors of on-board sewage. There is little indication that these chemicals have any harmful effects on the environment. The holding tank chemicals in use today are generally biodegradable and, if even marginally diluted, have little effect on treatment systems. No heavy metals or other severe, lingering toxics can be expected. However, some discussion of possible problems should be mentioned here. Of the two major disinfectant chemicals used-chlorine and formaldehyde- only chlorine has been shown to be toxic in the aquatic environment. While formaldehyde is considered a toxic substance, it is completely miscible in water and is readily degradable. While a direct link between MSD holding tank disinfectants and effects on the environment has not been documented, the presence of these chemicals in sufficient concentrations may be of concern (JRB Associates, 1981). Use of these chemicals as directed by the manufacturer should not result in problems. However, since the amounts of chemicals added are controlled by the boat owner or operator, excess use may occur.

Section 2. Surveys of Pumpout Stations and Dump Stations

The Clean Vessel Act of 1992 calls for surveys by coastal States within three months of notification to the States of the final technical guidelines to determine: (1) The number and location of all operational pumpout stations and dump stations at public and private marinas, mooring areas, docks, and other boating facilities within the coastal zone of a State; and (2) the number of recreational vessels in the coastal waters of the State with Type III marine sanitation devices (holding tanks) or portable toilets and the areas where those vessels congregate.

Survey information may be obtainable from the boat registration process or files; contacts with trade associations or boating organizations; from national surveys if available; or from mail or telephone surveys of boaters or marina/mooring field facility operators. Some States have surveyed boaters at marinas on high concentration days. The U.S. Coast Guard, telephone 202/267- 1497, can provide the following information regarding Documented Vessels (5 net tons and larger): The vessel's port of documentation, vessel length, beam, net tonnage, and whether or not the vessel is equipped with mechanical propulsion.

Section 3. What Constitutes Adequate and Reasonably Available Pumpout Stations and Dump Stations in Boating Areas

Factors affecting pumpout use: Potential demand for pumpouts and/or dump stations is a function of several variables. First is the number of boats of a size that use sewage holding tanks or portable toilets and where they are stored. Second, accessibility of pumpouts and dump stations affects their use. Distance from routes of travel or from the home port as well as the likely waiting time once at the facility can affect the willingness of boaters to use pumpouts and dump stations. A third factor to consider is boat use. High use at moorages is related to transient versus ``parking lot'' customers, year-round versus seasonal users, and the frequency of overnight use of boats. High boat use is seasonal, correlated with good weather, weekends and holidays. Fourth is the fee charged, with higher use related to lower fees (Ross & Amaral, 1992).

High use of pumpouts and dump stations has also been related to aggressive management practices, active enforcement of ``No Discharge Areas'', perception of need by the public (related to the environmental sensitivity of the area and educational efforts), and good maintenance (Ross & Amaral, 1992).

Determining adequate and reasonably available station/facility needs: Boat numbers, boat size, boating use patterns, numbers and distribution of existing facilities, and where boats are kept during boating season (i.e., in a marina, yacht club, private dock, mooring, home on a trailer, etc.), determine the need for pumpout stations and dump stations. Moorages that receive high transient use, have mooring fields for large boats, are visited by large numbers of boats for refueling, and/or have a large number of people sleeping overnight or living on their boats should have high priority. Yacht clubs, boatyards and large capacity private docks should also be considered for priority installation of pumpouts and dump stations. Other situations that might be considered for the installation of facilities include marinas that provide fuel or service vessels equipped with MSD holding tanks. In addition to distributing stations/facilities in the above types of boating moorages, additional stations/facilities may be warranted where boat use impacts poorly flushed bays, coves, or sloughs and environmentally sensitive sites. After new facilities have been installed, subsequent patterns of use will indicate where and if additional pumpouts are needed. Periodic surveys should be conducted to ensure adequate numbers of pumpout stations and dump stations exist for boaters in the future.

Requirements for pumpout and dump stations vary by State and harbor. Some examples are as follows: Delaware requires a pumpout for marinas harboring 100 or more boats with marinas of 25-100 sharing a pumpout and those with less than 25 not required to install facilities. For New England, EPA Region I guidelines suggest a pumpout for 300-600 boats with toilets. A minimum of one pumpout per 300 boats with toilets is recommended in transient harbors with a high percentage of large vessels, while one pumpout per 600 boats with toilets should be provided in ``parking lot'' harbors where most boats are less than 25 feet long. In California's Richardson Bay, the pumpout guidelines is one station for every 300 boats. Launching ramps, marinas, etc., that cater to small craft (under 26 feet) or are too shallow for larger vessels may not need pumpouts, but may still require dump stations to receive portable toilet waste.

EPA's assessment (EPA, 1981) estimated that 20% of the boats between 16 and 26 feet, 50% of the boats between 26 and 40 feet, and all of the vessels over 40 feet had installed toilets with some type of MSD. So, if exact data are not available, an estimate could be calculated. The following is a method for estimating Statewide need for pumpout stations and dump stations (McKiernan, pers. comm.). It is not intended as a guide for determining requirements for a specific marina or harbor. The following assumptions underlie this method and can be adjusted where statistically valid information is available relating to a State's unique boating population characteristics.

(1) Given the availability of boat length information gathered during boat registration, assumptions can be made regarding the type of on-board sanitation equipment.

Boat length	Number with toilets (percent)	Type of system
16'-26	20	Portable toilets.
26'-40	50	Holding tanks.
40'+	100	Holding tanks.

(2) It is assumed every boat which is occupied will require service once a weekend and that the occupancy rate during peak periods is 40% (Ross, N. Auto Parking in Marinas, IMI, Wickford, RI, 1989).

(3) This method also assumes facilities will be in operation for twelve hours per day during peak boating season weekends and that the average time to service a boat's system will be 15 minutes for holding tanks and 5 minutes for portable toilets. Therefore:

Calculation for Estimating Need for Dump Stations

No. of Boats 16' - 26'	x	No. With Portable Toilets (20%)	x	Peak Occupancy Rate (40%)	=	BOATS REQUIRING DUMPING STATIONS
						=Dump Stations Req.
Boats Served Per Hour	x	No. of Hours Of Operation Per Weekend	=	BOATS SERVED PER FACILITLY		
(12)		(24)		(288)		

Calculation for Estimating Need for Pumpout Stations

No. of [(Boats 26' - 40'	x	No. With Holding) + Tanks (50%)	No. of Boats] x 40'+	Peak Occupancy Rate (40%)	=	BOATS REQUIRING PUMPOUT STATIONS
						=Stations Req.
Boats Served Per Hour	x	No. of Hours Of Operation Per Weekend	=	Boats Served per Pumpout		
(4)		(24)		(96)		

Section 4. Plans for Constructing Pumpout Stations and Dump Stations

The Clean Vessel Act calls for coastal States, within six months after notification of the final technical guidelines, to develop a plan for any construction or renovation of pumpout stations and dump stations. For efficiency of review and approval by the Fish and Wildlife Service, coastal States should complete the plan in the standardized format identified in the technical guidelines.

Section 5. Education/Information

A clearly defined education/information program that will support the timely implementation of a State plan should be presented by the State as a part of that plan. This guidance provides States with some ideas and information useful in developing an education/information program effective at informing the public, the boating community, the boating industry, local government officials, public interest groups, and other audiences the State identifies. Ultimately, the State education/information program should provide information and understanding that will encourage the use of and installation of pumpout and dump stations.

Education of the boating, marina owner, and vessel sewage handling and treatment communities is important to the potential success of this program. An effective education/information program will help to realize both short term and long term goals of the Act. The goals of education are as broad as the audiences they should be targeted to reach,

yet, these goals can be achieved with increased dialogue between and information to these groups.

Six audiences should be considered when developing an education/information program regarding vessel sewage disposal, handling, and treatment, as follows: (1) Boat owners and operators; (2) Marina owners and operators; (3) Sewage treatment plant owners and operators; (4) Federal (where applicable), State and local governmental authorities and organizations; (5) Boating supply and retailers; (6) The general public.

There are a variety of media that States may have available for disseminating this information. Common methods to consider are; brochures, workshops/symposiums, educational videos, TV/radio, signs, boat shows, etc. Innovative methods are encouraged.

Issues to consider when developing education/information material targeted to a specific audience:

Issues on which education/information programs for boat owners and operators, as well as, boating supply and retailers, might focus would include: (1) Environmental impacts of boater sewage and the benefits of pumping out at a pumpout station and using a dump station; (2) How a pumpout station operates; (3) Pumpout hose connections/adapters; (4) Pumpout locations and fees; (5) ``Green'' boat toilet chemicals, i.e., short term biodegradable or less environmentally-damaging treatment chemicals. Encourage manufacturers through demand to market only environmentally responsible products; (6) Proper operation and maintenance of boat toilets; (7) The value of responding to boater surveys and requests for information.

Marina owners and operators are important participants in the implementation of this program. This group is making a commitment for the long term by agreeing to install, maintain, and operate pumpout and dump stations. Issues States should consider (where applicable) when developing education/information programs for marina owner and operators include: (1) Benefits to marinas under this program; (2) The application process for receiving funds to construct, renovate, maintain, and operate pumpout and dump stations; (3) What are adequate and reasonably available pumpout facilities; (4) Reasonable fees; (5) Environmental benefits of providing pumpout stations and dump stations; (6) How to obtain a permit for a municipal hookup and options for disposal of pumpout waste; (7) Where to locate pumpout and dump stations; (8) Methods of encouraging boater compliance with pumpout requirements; (9) Types of pumpouts and dump stations currently on the market; (10) Encourage manufacturers to provide demonstrations for and training of marina personnel responsible for operating these devices; (11) Highlighting Those marinas that have done an excellent job in installing and maintaining facilities.

Wastewater collected from pumpout facilities must be discharged from the marina to an appropriate treatment facility. Waste treatment plant owners and operators should be made aware of the options available to them for receiving and treating waste from boat holding tanks and portable toilets. Issues for States to consider when developing education/information programs for wastewater treatment facility owners and operators include: (1) Effects of this waste stream on waste treatment plant's normal operations and how to mitigate any negative effects; (2) Volume of waste from boats in proportion to normal ``household'' loading standard; (3) Experience of waste system operators in areas designated ``No Discharge''.

States may find it necessary to develop education/information programs that address issues related to Federal, State and local government agencies. Issues to consider for

education/information programs for this audience include: (1) Awareness of environmental requirements and enforcement options for vessel sewage disposal and treatment (particularly for incoming harbor masters); (2) Encouraging the development of technical guidelines for design, installation, and use of pumpout facilities; (3) Encouraging the appropriate Federal agencies to support a national standard on pumpout and boat fittings; (4) Environmental benefits of reducing the amount of waste water discharged from boats in localized areas, e.g., shellfish beds; (5) Encouraging vessel manufacturers to include procedures for proper operation of vessel holding tanks and shoreside pumpout facilities in new owners' manuals; (6) The value of enforcement in implementing this program; (7) Value of educating the public; (8) Informing Federal and local governments on how to access Federal informational sources, and encouraging them to do so; (9) Working with local governments to mandate, after a reasonable period of time, the installation of pumpout facilities at marinas, as a condition of marina licensure or operation.

Education of the general public has an important role to play. Issues to consider for education/information of this audience include: (1) The environmental impacts of boater waste; (2) Importance of the coastal resource; (3) Efforts by the boating community to reduce waste discharges.

States have options for distribution of educational information related to boating and pumpout issues. Options include magazines, radio public interest spots, environmental groups, association and federation newsletters, National Estuary Program forums, State and local education programs, local citizens groups, and student groups. New and innovative ways of educating the boating community and the general public are encouraged. Representatives of the various groups could meet together at the State/local level to determine what information and education materials and strategies are needed to accomplish the objective. Private conservation and education groups could provide suggestions and materials once the needs are defined.

Section 6. Appropriate Methods for Disposal of Vessel Sewage From Pumpout Stations and Dump Stations

Introduction: The safe and sanitary disposal of vessel sewage waste must be provided for when constructing and operating pumpout stations and dump stations. Boaters will not want to spend time and money pumping out unless they can be assured that their efforts will help improve water quality.

Vessel Sewage Characterization

Vessel sewage is more concentrated than domestic sewage for almost all the standard parameters used to measure the quality of wastewater, including suspended solids, BOD, and total nitrogen. For example, the typical concentration of BOD in vessels is between 1700-3500 mg/l, while typical sanitary wastewater ranges from 110-400 mg/l for raw sewage and 5-100 mg/l for treated sewage. Raw municipal sewage has a lower concentration because people on land use more water for sanitary purposes than do people on boats. In addition, the proportion of gray water (defined as water from baths, showers and kitchens) is greater in municipal sewage, and municipal collection systems are subject to inflow and infiltration of storm water.

Another characteristic of vessel holding tank waste is the presence of chemical additives used to disinfect and deodorize the waste. These same additives are used to treat sanitary wastes in recreational vehicles (RVs), trains, and aircraft. Ideally, the odor-control chemicals should be

biodegradable when diluted. These chemical additives commonly contain an active disinfectant along with dyes and perfumes. Some of the more common disinfectants include formaldehyde, paraformaldehyde, and quaternary ammonium chloride; formaldehyde is the most popular because of its effectiveness.

There is some concern from operators of small municipal and package sewage treatment plants and some marina operators with septic systems that vessel sewage holding tank waste may adversely affect performance of their sewage treatment systems by destroying the bacterial population, thereby reducing plant efficiency. A second concern, particularly of operators of municipal treatment plants operating at or near capacity, is that the additional volume of waste will cause the plant to exceed its capacity to treat wastewater effectively.

Research into the effects of chemical additives on sewage treatment processes indicates that these problems have been greatly overstated, and that, in general, most municipal sewage treatment plants can handle vessel holding tank waste without difficulty. In addition to relatively low volumes generated by sewage pumpout stations, the weekly and seasonal usage of marina facilities protects treatment systems from failing or exceeding capacity. Marinas receive their largest pumpout volumes on weekends and, in many parts of the country, only during the summer season. Therefore, treatment plants generally are able to assimilate such intermittent waste loading and no serious operational problem occurs.

Despite the negligible effects of holding tank additives on sewage treatment processes, general concern about toxic contaminants in the environment has led to the development of non-toxic, environmentally benign holding tank deodorants and disinfectants such as quarternary ammonium compounds, enzymes and adamantane. Holding tank chemicals in use today are generally biodegradable and if even marginally diluted, have little effect on treatment systems. No heavy metals or other severe, lingering toxics can be expected. States should encourage the use of these biodegradable products through education and, if necessary, regulation.

Disposal Methods

Disposal methods will vary depending on a number of factors, including: State and local sanitation codes; the number of recreational vessels and where the vessels are concentrated; the availability and geographic proximity of existing treatment facilities to boating centers; and hydrogeologic characteristics, including soil types and groundwater flows. Depending on these factors, States may consider the following methods: (1) Off-site treatment: (a) Discharge to a public wastewater collection system and treatment facility; (b) discharge to a holding tank with removal and transport by a licensed septage hauler to a municipal septage receiving/treatment facility.

(2) On-site treatment at marinas: (a) Discharge to a package treatment plant with subsequent discharge back into coastal waters (a National Pollutant Discharge Elimination System permit would be required); (b) discharge to a septic system, where no other alternative is available. The following is a description of the relative merits of each of these methods. It should be noted that each State has its own regulations and policies regarding what it considers ``appropriate'' disposal methods. What one State considers appropriate or even desirable, another may prohibit.

Off-Site Treatment

There are hundreds of existing municipal wastewater treatment facilities serving coastal areas

throughout the country. Most provide at least secondary treatment utilizing an activated sludge process, but they vary greatly in size and details of treatment structures, sludge handling capability, and success in meeting current permit terms and conditions. In addition, many also incorporate septage receiving and treatment facilities into the overall treatment system.

Public Wastewater Collection Systems: The best option for the safe and sanitary disposal of vessel sewage is through a direct connection to an approved wastewater treatment facility. Most municipal treatment plants should have no problem accepting vessel holding tank waste. The relatively small volume of holding tank waste, bled into the sanitary waste stream, is effectively diluted by municipal sewage. The relatively large volume of wastewater routinely handled by these plants also mitigates against plant upset, and the treatment process can also break down or volatilize certain of the trace organic chemicals. Sewage treatment plants with a long history of accepting holding tank waste have reported no problems with this practice. However, States should exercise caution in designating sewage treatment plants that are over-capacity, have operational problems, or violate permit conditions on a regular basis.

Shoreside Holding Tanks/Septage Treatment Facilities: Many boating facilities are located where connection to a wastewater collection system is difficult or infeasible. In these cases, connection of the pumpout or dump station to a shoreside holding tank is the next best option. Holding (or tight) tanks provide a means for sanitary storage of vessel sewage until it can be transported by a licensed septage hauler to an approved septic waste receiving/treatment facility. The holding tank may be above or below ground, depending on State or local requirements, but should be located on solid land and secured to minimize potential storm damage or vandalism.

Septage receiving/treatment facilities are designed specifically to pretreat these wastes before introducing them to the wastewater treatment system. Because vessel holding tank and portable toilet waste is similar in nature to domestic septage, although more concentrated with variable amounts of organic chemicals, a properly operating municipal treatment plant with septage receiving/treatment facilities should not be adversely affected by the introduction of holding tank waste.

Modifications to Wastewater/Septage Treatment Facilities: Some wastewater treatment plants and septage receiving/treatment facilities may require modification to accommodate vessel sewage. These modifications may include increased capacity, construction of adequate septage receiving/treatment facilities, holding and bleed-in facilities, pretreatment facilities, and additional analytical capability. To determine which plants have the capability to effectively process holding tank waste, and whether additional facilities (or modifications to existing ones) are required, States may need to conduct a survey of the existing capabilities and limitations of their existing sewage treatment plants. A matrix to determine these capabilities might include the following elements, for which many States have available data as file information: (1) List all sewage treatment plants; (2) Eliminate plants that are over capacity, have operational problems, or violate permit conditions regularly; (3) Evaluate the balance for existing capacity and treatment methodology; (4) Estimate the available capacity; (5) Develop a short list of candidates for vessel sewage treatment; (6) Develop list of potential needs for modifications to those plants, including: (a) Receiving stations; (b) holding/bleed-in tanks, and associated piping; (c) pretreatment needs; (d) associated sludge handling needs; and, (e) additional staff and analytical capabilities.

On-Site Treatment

On-site treatment at a marina may be a viable alternative when the marina is not located near sewer lines, when transport of waste is prohibitively expensive, when the local sewage treatment plant is unable to accept additional discharges, and when groundwater and coastal waters can be protected. Prior to installing these systems, State law should be reviewed for legality. On-site treatment eliminates the need to transport waste. However, the proliferation of small, potentially troublesome treatment systems often creates more water quality problems than the collection of vessel sewage is intended to solve, including coastal and groundwater contamination.

Package Treatment Plants

Package treatment plants offer an alternative for the treatment of both vessel sewage and waste generated by marina restrooms and other shoreside sanitary facilities. Package treatment plants are usually small, prefabricated sewage treatment plants that provide secondary treatment, generally utilizing the extended air mode of operation. In this process, treatment is accomplished by introducing air into the wastewater to encourage the growth of aerobic bacteria which digest the sewage, providing a high degree of treatment.

Discharging vessel sewage to a package treatment plant should only be considered by boating facilities with large treatment systems that can handle the increased shock loading and chemical additives present in this type of waste. The typical problems with such systems are exacerbated by the nature of holding tank waste. Like septic systems, package plants are designed to deal with sewage with a low solids content, and the treatment process itself is highly dependent on an environment that is not toxic to the treatment bacteria. Holding tank waste is concentrated, which may raise treatment and sludge handling issues. Normal difficulties with treatment variability would be worsened by the slug flow nature of the discharges to a package treatment plant, though they can be eliminated by ``bleeding'' the influent into the plant. In addition, the waste may contain metals and hydrocarbons which can destroy the treatment process in a small plant.

Based on these concerns, States may not want to encourage the development of a multiplicity of small sewage treatment plants, due to the variability of effluent quality as well as substantial difficulty in ensuring proper operation and maintenance of the mechanical components of such systems.

Septic Systems

Septic systems are the conventional on-site sewage treatment systems throughout the United States. They consist of a septic tank where primary treatment (physical operations) predominate. These operations are floatation, settling, and the digestion of the sludge that accumulates in the bottom of the tank. Effluent from the tank is directed to a subsurface leaching system which provides additional treatment by establishment of a biological crust; its resultant permeability is a direct function of the BOD and suspended solids in the effluent stream. Once effluent leaves the crust zone it enters a soil environment where, if the septic system has been properly sited, a number of treatment processes will result in a high quality final effluent. The size and location of the leaching system (or drainfield) is extremely important because of the quality of the final treatment is highly dependent on the type and quantity of the soil through which the effluent will pass.

In general, septic systems are not a favorable option for the disposal of vessel sewage, because they are not designed to treat the high solids content, high strength, and possibly toxic content of these wastes. They are not very effective at removing trace organic chemicals, and are ineffective at removing nutrients. The chemical additives used to disinfect and deodorize holding tank waste may kill the bacteria that aerobically digest the sewage, allowing solids to pass through the septic tank and causing the drainfield to clog and overflow. Nutrients leaching from the drainfield may stimulate algal growth in receiving waters, which can reduce the amount of sunlight necessary for submerged aquatic vegetation to grow and use up oxygen needed for fish and other aquatic life. In marine waters nitrogen is the nutrient most likely to cause these adverse effects, while phosphorous is the problem in fresh water.

Vessel sewage should be discharged to a septic system only if no other options exist and the system is specifically designed and sited to receive such waste. This design includes: Using large tanks to manage and ``bleed'' in increased flows from pumpout stations; combining flows from ordinary bathroom facilities on-shore and the pumpout stations to dilute pumpout wastes; providing two septic tanks in series to help segregate solids in the first tank and increase retention time in the system; a large single drainfield or use of alternating drainfields, and proper siting to assure the leach field does not drain into the coastal waters or contaminate groundwater. In addition to following specific design criteria, septic systems should be inspected regularly and properly maintained.

Section 7. Types of Marine Boat Sewage Pumpout Stations and Dump Stations That may be Appropriate for Construction, Renovation, Operation, or Maintenance, and Appropriate Location of the Stations and Facilities Within a Marina or Boatyard

There are four basic types of pumpout stations on the market. Each one has its advantages and disadvantages. Since every marina is unique, there is no one solution that will work in all cases. Therefore, each case should be examined individually, and the pumpout that will work best in any particular situation should be selected. Costs for equipment and installation can vary greatly, depending on need for sewage lift stations to accommodate widely fluctuating tides, need for special onshore holding tanks to hold concentrated waste, cost of connection to a sewer system, and other factors. Stationary or portable dockside pumps cost in the range of $2,000 to $10,000, and typical complete installations may be as high as $20,000. Following is a list of pumpout station types with a discussion of advantages and disadvantages.

(1) *Stationary pumpout unit:* Stationary units include a connector hose and pump, and are connected directly to a local or municipal sewage treatment facility or a holding tank. The unit is usually located at the end of a pier or floating dock, often near the fueling facilities. Vessels access the pumpout station by approaching and securing to the dock or pier. Advantages are convenience, efficiency and speed of use. Principal disadvantage is that the unit restricts pumpout service to a single area of the marina, which may cause congestion.

(2) *Portable pumpout unit on wheels:* This unit may be a wheeled device, consisting of a holding tank, hose and mechanical or hand pump, that is pushed along a dock to the vessel's location to pump out vessel sewage. The advantage is the unit is brought to the boat rather than the boat to the station. When full of sewage, however, the unit can be heavy and cumbersome. Since it must be moved from boat to boat, the time required to complete the pumpout operation can be somewhat greater than that of fixed units. Being able to move the unit can also be an advantage for pumping out boats during slow weekdays, especially after a busy weekend. The unit is also limited by its storage capacity.

(3) *Portable pumpout unit on vessel:* This unit is a boat with pumpout station on board, consisting of a pump and holding tank, that may be radio-dispatched or respond to a signal flag, to pump vessel holding tanks. The advantage is the convenience of having the pumpout station come directly to the boat.

(4) *Remote operated multi-station system:* This system has a pump which transports wastes via a main sewer to central collection and treatment. This unit can provide pumpout capabilities at any number of locations throughout the marina. This system, which provides wastewater collection anytime, combines the convenience and efficiency of fixed units with the versatility offered by portables. This system must be specifically designed to individual project requirements.

There are five basic types of pumps used in pumpout systems. Following is a description of each.

(1) *Centrifugal pump (rotary or impeller types):* This pump works when sewage in its impeller is spun to the outside of the impeller by centrifugal force, which creates a low pressure area at the impeller as it pumps. Most centrifugal pumps require priming. This pump is usually employed in lift station situations.

(2) *Reciprocating pump (diaphragm and piston types):* This pump, mechanical or hand operated, creates suction by mechanically lifting a diaphragm up and pushing it down in a pump body. The diaphragm works in conjunction with two or four check valves. As the diaphragm lifts, the low pressure area under it causes sewage to be sucked into the body through the inlet check valve; when it is pushed down the pressure under the diaphragm closes the inlet check valve and forces sewage out the outlet check valve. This pump is self-priming.

(3) *Vacuum pump:* This pump does not directly contact sewage, but draws air out of a tank which creates the necessary low pressure area or vacuum to cause the sewage to flow in. When the accumulator tank is full, pressurized air enters the accumulator tank and the pressure pushes the sewage out to a sewer or holding tank. This pump allows pumping over longer distances.

(4) *Flexible vein impeller pump:* This pump has suction lift. It is easy to repair and needs no priming. A switch device is needed to prevent the pump from running dry and damaging the impeller.

(5) *Progressive cavity pump:* This pump consists of stainless steel rotor or screw surrounded by a tight fitting rubber sleeve. As the rotor turns the sewage is progressively moved to the discharge line. This pump is self-priming.

Equipment failure can occur with any of the above equipment. Most common causes are mechanical failure, followed by clogging of hose and/or pump, loss of hose prime, and hose failure (Ross & Amaral, 1992).

In addition to pumpout stations, there are facilities to receive sewage waste from portable toilets. A dump station consists of a receiving receptacle for sewage from portable toilets, and includes associated equipment and storage tank or sewer line connection. This facility is not a land-based or floating restroom, but can be made a part of such. Floating dump stations should be considered at mooring fields and other strategic locations. The device typically includes a receiving basin, which should be a minimum of 12 inches in diameter, and with a lid that

completely covers the receiving unit (to control odors and insect access), with provisions for rinsing the portable toilet following emptying of the contents. If the unit is designed to drain, the drain should be a minimum of 3 inches in diameter and equipped with an insect-tight cover. Dump stations should be equipped with a washdown system to allow cleaning of the portable toilet. The washdown system should be clearly marked as unfit for drinking water. Wand attachments may be connected to a pumpout station to empty portable toilets, rather than building a separate facility.

Following is a description of other equipment that is part of the pumpout station.

Pumpout station holding tanks: Holding tanks should be sized appropriately for the volume of sewage generated and the frequency of removal of material from the holding tank. State and local requirements may govern the size of holding tanks. Generally, a 1,500-gallon holding tank can serve up to 100 boats with holding tanks. In terms of the number of boats serviced with a normal removal schedule, the following minimum sizes are suggested:

Total number of boats serviced with holding tanks	Recommended holding tank volume
1-20	300
21-40	600
41-60	900
61-80	1200
81-100	1500
100+	2000

Pipes/hoses: Discharge piping should be rigid or noncollapsing flexible, with locking connections. Corrugated or ribbed hoses are not recommended. The line should be watertight and appropriately fastened or secured to the dock or pier. Local building codes should be checked for specific piping requirements, but the following materials are generally accepted for pumpout station service: Polyvinyl chloride (pvc), and polyethylene. Expansion joints should be included where appropriate. Force main systems may require ``thrust blocks'' and other security fastenings.

Fittings: A deck fitting (sewage removal fitting) is a flanged fitting permanently mounted on the vessel and connecting to the onboard holding tank. A connector is a nozzle or coupling permanently attached to the suction hose of a pumpout station. An adapter is a fitting designed to facilitate adapting a pumpout connector to a vessel deck fitting.

When the requirement for vessels with an installed toilet to have a certified marine sanitation device went into effect under 33 CFR 159 on January 30, 1975, there was a requirement for sewage removal fittings or adapters to be 1.5 inch for boats less than 65 feet in length. The expected types of acceptable fittings included threaded, flanged, or quick disconnect fittings. However, 33 CFR 159 was amended on January 3, 1977 to allow holding tanks to be certified by definition if they store sewage and flushwater only at ambient air pressure and temperature. As a result, boats have been put on the market with many sizes of sewage removal connector fittings, requiring the use of adapters in order to assure a clean, tight connection when a pumpout occurs.

There are several adapters on the market today. A black rubber nozzle is used by most boaters. Another adapter, the fuel hose fitting or cam-activated connector, consists of a male portion which fits into the connector, and a female portion which locks onto the male portion.

A suction nozzle or fitting such as a friction nozzle (right angle preferred) or cam-activated quick connector positive locking attachment should be provided on the end of the suction hose. Adapters should be provided to fit the 1.5 inch discharge connector. A valve should be provided on the suction hose at the nozzle. A valve should be provided on the pump end of the suction line if the line is to be installed in a manner such that sewage would discharge from the line when the pump is removed for service. Positive locking connections on the end of the discharge line should be provided to prevent it from coming loose during discharge. The discharge line should be protected from freezing, and prevented from leaking into the water.
Suction hoses should be equipped with a clear tubing or a sight glass on the suction end of the hose to allow the pumpout station operator to determine when the pumping is complete.

Other factors that should be considered when installing pumpout stations/dump stations include the following.

Convenient location enhances use. Stationary pumpout stations should generally be located as close to a boat off-loading point as possible and/or where boats need to maneuver the least. The end of a dock is a good location because it is accessible. Many facilities are located at the fuel dock, so boaters only have to go to one location for both of these activities. Water level changes should be considered when installing pumpout stations.

Operation and maintenance: Proper operation and maintenance of pumpout stations and dump stations are critical to provide adequate and reasonable service. An individual should be assigned responsibility for operation and maintenance of pumpout and dump stations.

Consider appropriate protective clothing, such as gloves, and hand washing, to protect the operator. Washing facilities should be readily available.

Convenience for boaters and operators is a major factor. Hours of operation for pumpout stations should be keyed to general operating hours for vessels in the area. Specific maintenance and winter storage requirements depend on the system and the location. However, the following minimum maintenance is suggested to maintain sanitary conditions: Use dedicated system for flushing and rinsing hoses; flush hoses; pump clean water through the system, and empty into disposal area, never onto the ground or into the water.

An event or hour meter could be installed on the pump to monitor its use. Monitoring of pumpouts should be an integral part of a marina management program to ensure that the facilities are operating effectively. The following practices can be applied successfully to maintain pumpout facilities: arrange maintenance contracts with contractors competent in the repair and servicing of pumpout facilities; develop regular inspection schedules; maintain a dedicated fund for the repair and maintenance of facilities.

Section 8. Other Information That is Considered Necessary to Promote the Establishment of Pumpout Facilities to Reduce Sewage Discharges From Vessels and to Protect United States Waters

Public/private partnerships: Since approximately 80 per cent (based on the 1986-87 National Boating Facilities Survey, IMI/URI conducted for NMMA) of the marinas in the United States are

privately owned, States are encouraged to develop partnerships, within State laws and regulations, with private marinas to construct pumpout stations at these facilities.

``*No Discharge Areas'':* Sections 312(f) (3) and (4) (A) and (B) of the Clean Water Act of 1987 enable States to apply to the EPA for designation of certain water bodies as ``No Discharge Areas''. In doing so, States must meet specific criteria outlined in 40 CFR 140.4 including demonstrating to the EPA Administrator that adequate and reasonably available facilities exist for the safe and sanitary removal of boat sewage. States should not consider ``adequate and reasonably available'' under the Clean Vessel Act to satisfy all requirements for determining ``No Discharge Areas'' under the Clean Water Act. A separate review and determination would have to be made by the EPA for Clean Water Act designation of a ``No Discharge Area''.

Holding tank bypass: Discharge of raw sewage from a vessel in U.S. Territorial Seas (within the three mile limit) is illegal. Holding tanks are frequently bypassed with the use of valves, commonly called Y-valves. A valve may be installed on any marine sanitation device holding tank to provide for the direct discharge of raw sewage when the vessel is beyond the baseline of the Territorial Seas, which is more than three miles from shore. The valve must be secured in the closed position while operating in Territorial Seas. Use of a padlock, non-releasable wire-tie, or removal of the valve handle would be considered adequate securing of the device. The method chosen must be one that presents a physical barrier to the use of the valve or the toilet. All Y-valves should be standardized, so that the handle points in the direction that the sewage flows and/or indicates the open and closed position. The Y-valve should be place after the holding tank rather than between the toilet and holding tank.

Upland and floating restrooms: Clean, well-maintained restrooms are very desirable for boaters. Many boaters would rather use these when available than use holding tanks. Restrooms should be constructed at marinas and other strategic locations.
Rental Contracts: Marinas could add language in rental contracts to prohibit discharge of sewage into the marina waters.

Disinfectants, perfumes: Industry should produce only products which will not harm waste treatment plants or septic tanks. A symbol should be placed on the label of these products indicating they may be discharged into treatment plants or septic tanks if correctly used in a properly designed treatment system.

Additional information: For additional information on pumpout stations, refer to: (1) ``A Guidebook For Marina Owners and Operators On the Installation and Operation of Sewage Pumpout Stations'', Maryland Department of Natural Resources Boating Administration, Coastal Technology, Inc., February 1990; (2) ``Commonwealth of Virginia Sanitary Regulations for Marinas and Boat Moorings'', State Department of Health, Richmond, VA, 1990; (3) ``Guidance for States and Municipalities Seeking ``No Discharge Area'' Designation for New England Coastal Waters'', Rev. 4/92, U.S. Environmental Protection Agency, Region 1, Boston, MA; (4) ``State of the Art Assessment of Boat Sewage Pumpout Program in Washington State'', 12/91, Howard Edde, Inc., Bellevue, WA, for Washington State Parks and Recreation Commission, Olympia, WA. For further information on pumpout stations and dump stations, consult ``Marina Pump Out Facilities'', Joseph Wettemann, 1/89, and ``Types of Pump Out Facilities'', Natchex, 7/92.

Dated: February 11, 1994.
George T. Frampton, Jr., *Assistant Secretary for Fish and Wildlife and Parks.*
[FR Doc. 94-5530 Filed 3-9-94; 8:45 am] BILLING CODE 4310-55-M

CVA Pumpout Guidelines (Summary)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of final guidelines.

SUMMARY: These final technical Guidelines are being published in response to section 5605, Guidance and Notification, of the Clean Vessel Act of 1992, which requires the issuance of draft technical guidelines for public comment within 3 months after the date of the enactment of this Act, and the issuance of final technical guidelines within 6 months after the date of enactment. The technical guidelines should be used by States to conduct surveys and develop plans for pumpout stations and dump stations, to develop education/information programs, and to construct pumpout stations and dump stations.

DATES: These final technical guidelines are effective April 11, 1994.

ADDRESSES: Copies of the final guidelines may be obtained by mailing a request to the Division of Federal Aid, Fish and Wildlife Service, U.S. Department of the Interior, 1849 C Street, NW. (Mailstop 140 ARLSQ), Washington, DC 20240, or by picking it up at the Division of Federal Aid, Fish and Wildlife Service, room 140, 4401 North Fairfax Drive, Arlington, Virginia 22203.

***FOR FURTHER INFORMATION CONTACT**:Bob Lange, Chief, Division of Federal Aid, (703) 358-2156.*